

AZORELLA Lamarck (APIACEAE) ON HEARD AND MACQUARIE ISLANDS, WITH DESCRIPTION OF A NEW SPECIES, *A. MACQUARIENSIS*

by

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ABSTRACT

Orchard, A. E. *Azorella* Lamarck (Apiaceae) on Heard and Macquarie Islands, with description of a new species, *A. macquariensis*. *Muelleria* 7(1): 15–20 (1989). — *Azorella macquariensis*, a new species endemic to Macquarie Island has been recognized. Hitherto it had been confused with *A. selago* which occurs on Heard Island and several other subantarctic islands but not on Macquarie Island. A key, comparable descriptions, and illustrations of the salient features are provided for the two species, and some of the specimens examined are listed.

INTRODUCTION

Azorella is a genus of 33–70 (Allan 1961; Mathias & Constance 1971; Airy-Shaw 1973) species of perennial herbs, often mat or cushion-forming with their main centre of speciation in the Andes of South America, but with a few taxa extending to the Falkland and sub-Antarctic islands.

One of the most southerly, and the most widespread species is *A. selago*, described by Hooker (1845) from a number of specimens collected on the voyage of the 'Erebus' and 'Terror'. It seems that he relied mainly on material from Kerguelen Island collected by himself and Anderson in drawing up his description, but also had available specimens collected by Darwin from Tierra del Fuego, by King from Port Famine, and by himself from Hermit Island. At the end of the discussion he mentioned, almost as an after-thought 'I have also seen specimens sent from McQuarrie's Island by Mr. Frazer'. (The Hermit Island collection was subsequently chosen as lectotype by Moore (1968).) Consequently, from the beginning this species was perceived to be widespread and circumpolar in distribution. This opinion was reinforced by subsequent reports of *A. selago* from Marion Island, Crozet Island and Heard Island (summarised by Greene and Greene 1963) and from Prince Edward and McDonald islands (summarised by Greene & Walton 1975). Chastain (1958) described polymorphism in *A. selago* on Kerguelen Island, adding to the characterisation of the species as widespread and variable.

Recently, comparison of material from Heard and Macquarie Islands has convinced me that two taxa are involved. While Heard Island specimens clearly match Hooker's original description and illustration, modern descriptions of Fuegian and Falkland Island plants (Moore 1968, 1983) and specimens from Kerguelen Island, the Macquarie Island plants can be distinguished by a number of characters, principally of the leaves, but also of the inflorescence and fruit. This species is described below, along with a comparable account of *A. selago*.

KEY TO THE SPECIES OF AZORELLA ON HEARD AND MACQUARIE ISLANDS

1. Leaf lamina 3(–5)-lobed, the lobes divided \pm to the base, acute, pungent with a long setose point; wings of the petiole reduced to a truncate ridge at the base of the lamina; flowers solitary or sometimes paired; fruits up to 1.7 mm long, hidden in upper leaves, sepals \pm deciduous 1. *A. macquariensis*
1. Leaf lamina (4–) 5–6(–7)-lobed, the lobes divided only halfway to the base, blunt, with at most a tiny mucro; wings of the petiole produced into auricles at the base of the lamina; flowers usually in groups of 3; fruits 1.7–2.0 mm long, at least $\frac{1}{2}$ -exserted from the leaves on pedicels 2 mm long, sepals persistent. 2. *A. selago*

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1. *Azorella macquariensis* Orchard, sp. nov.

Azorella selago auctt. non J. Hooker (1846): J. Hooker, Fl. Antarc. 2(1846) 284–5 (quoad specimen Frazeris); Cheeseman, Vasc. Fl. Macq. Is. (1919) 26; Taylor, Fl. Veg. Soils Macq. Is. (1955) 128–30; Allan, Fl. New Zeal. 1(1961) 451–2; Copson, Atlas Vasc. Fl. Macq. Is. (1984) 37; and all other references to '*A. selago*' in so far as Macquarie Island is concerned.

ILLUSTRATIONS: Taylor, Fl. Veg. Soils Macq. Is. (1955) Pl. 16, 17, 18, 29 (as *A. selago*).

Herbae perennes pulvini formantes. *Folia* alterna arcte imbricata; petioli 3–4(–10) mm longi, late alati, vaginantes, jugo incrassato truncato ad apicem; lamina 3(–5)-partita, lobis lanceolatis liberis fere basi acutis acumine setoso, glabra vel sparsim setosa in superficie. *Flores* solitarii, interdum binati, hermaphroditi. *Fructus* cinnamomei, 1.3–1.7 mm longi, inter folia supera occulta, stylis persistentibus, sepalis ± deciduis. (Fig. 1).

TYPUS: Macquarie Island, Pyramid Lake, north side, in *Azorella/Festuca/Rhacomitrium crispulum* fellfield, alt. 190 m, 4.xi.1981, R. D. Seppelt 12039. HOLOTYPE: HO 67713.

Perennial herb forming extensive tight mats, cushions, or in exposed situations, buttons; main branches prostrate, woody, to 5 mm in diameter; lateral shoots erect, herbaceous, freely branched, crowded, 3–5(–15) cm tall clothed in the remains of old leaves. *Leaves* alternate, closely imbricate and appressed to stems, persistent; petioles white, 3–4(–10) mm long, thickened at the apex, 3(–5)-veined, with a membranous wing outside the veins, the wings fused to form a sheath around the stem in the lower $\frac{1}{4}$ – $\frac{1}{2}$ and produced above to form a very short truncate ridge-like 'ligule' at the base of the lamina; lamina 3(–5)-partite, the lobes divided almost to the base in young leaves, lanceolate, 1.7–2.0(–4.0) mm long, 0.6–0.9(–1.4) mm wide, thick and subfleshy, acute with a terminal setose apiculum, thickened margins, glabrous or with 1–3(–5) bristle-like hairs 1.4–4.0 mm long on the adaxial surface. Flowers terminal, solitary or sometimes paired, hermaphrodite, peduncles short with the flowers enclosed by the upper leaves. *Involucral* bracts 2, fused at the base to form a small cup, leaf-like or lanceolate. *Sepals* 5, white, linear, 0.5–0.9 mm long, unequal. *Petals* 5, pale reddish-brown, 1.5–2.0 mm long, incurved, slightly hooded, acute. *Stamens* 5, 1.7–3.0 mm long. *Styles* 2, 0.75–1.0 mm long, with a swollen stylopodium at the base. *Ovary* slightly laterally compressed. *Fruit* yellow-brown, ± sessile or on a pedicel to 1 mm long and therefore hidden amongst the upper leaves; body of fruit obovoid and slightly flattened laterally, 1.3–1.7 mm long, 1.0–1.5 mm wide, 0.9–1.0 mm thick, weakly ribbed; styles persistent, sepals ± deciduous.

This species is confined to Macquarie Island where it dominates the feldmark community and other exposed windswept situations, forming extensive cushions and tight mats. Flowering occurs from December to February and fruiting from January to April. A detailed account of the ecology of the species is given by Taylor (1955), of the process of cushion formation by Ashton and Gill (1965) and of detailed distribution by Copson (1984), all under the name *A. selago*.

SELECTED SPECIMENS EXAMINED (total 40):

Macquarie Island — 'Featherbed' terrace, 7.xii.1948, Laird s.n. (AD, AK, BISH, CHR, HO 86261, MEL); eastern side of Sawyer Creek Valley, 21.i.1981, Seppelt 11939 (HO); north side of Pyramid Lake, 4.xi.1981, Seppelt 12039 (HO); SW. side of Green Gorge, 4.i.1982, Seppelt 12390 (HO); near Flynn Lake, 29.xi.1950, Taylor s.n. (MEL 689443); Gadgets Gully, 3.ii.1951, Taylor s.n. (MEL 689445); North Mt, 4.iii.1951, Taylor s.n. (MEL 689450); Plateau, xi.1976, Tyler s.n. (HO 30818).

NOTES:

This species is most obviously distinguished from *A. selago* s.str. by its small size and by the shape of its leaves. Upper (current year) leaves of *A. macquariensis* are usually 3-lobed with the lamina divided almost to the base, and the lobes are acute and bristle-tipped. In lower, older, leaves the bristle may be lost but the lobes remain ± acute, rather than blunt and rounded as in *A. selago*. In particularly robust plants or those growing in shaded places the leaves are larger and sometimes up to

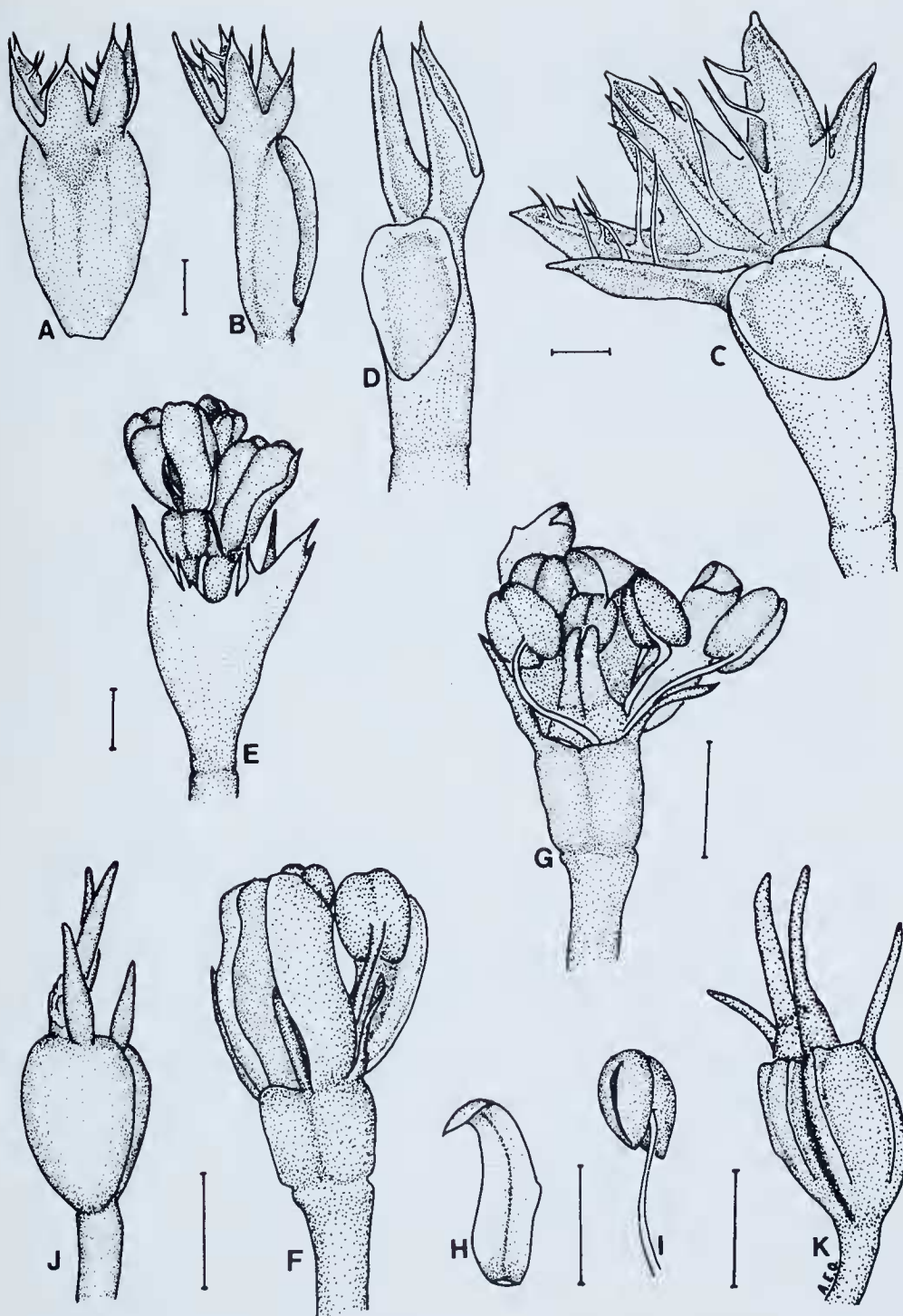


Fig. 1. *Azorella macquariensis*. A — Young 5-lobed leaf, abaxial view. B — The same, lateral view. C — Older leaf from a robust (?shaded) branch, adaxial view, stem removed to show sheath and 'ligule'. D — Young 3-lobed leaf, glabrous form. E — Inflorescence showing a pair of flowers in an involucre cup. F — Flower at anthesis. G — The same, 2 petals removed. H — Petal. I — Stamen. J — Fruit, dorsal view, 2 sepals still attached. K — The same, commissural view. (A–C, E from *Seppelt 12039*; D, F–I from *Tyler s.n.*, HO 30818; J, K from *Taylor s.n.*, MEL 689445; all bar scales represent 1 mm.)

5-lobed, resembling those of *A. selago*, but the species can still be distinguished by the characters of the tips of the leaf lobes, and also by the shape of the 'ligule'. This is formed as a prolongation of the membranous wings of the petiole. In *A. macquariensis* the 'ligule' is short, little more than a ridge, and truncate or slightly rounded. In *A. selago* s.str. it consists of two distinct, rounded auricles. There are also supporting differences in the flowers and fruits. In *A. macquariensis* the flowers are typically solitary at the tips of the new shoots, sometimes paired, whereas in *A. selago* they are borne in groups of three. Taylor (1955) mentioned that 'ripe seeds are shed from January to April' in the Macquarie Island species, without further comment. However, fruits are very scarce on existing collections. It is not clear whether this reflects a failure of fruit formation or whether fruits in this species are shed rapidly and easily, not surviving on herbarium specimens. The few surviving fruits are hidden amongst the upper leaves on short pedicels and very difficult to find. On *A. selago* on the other hand fruits seem to set readily and persist for some time on the plants. Their peduncles elongate and they are held at least half exserted and often fully exserted above the upper leaves. The sepals in *A. selago* persist on the fruit, while those of *A. macquariensis* are mostly shed.

2. *Azorella selago* J. Hooker, Flora Antarctica 2 (1845) t. 99, (1846) 284.

[TYPUS: 'Tierra del Fuego, south part, C. Darwin, Esq. Port Famine, Capt. King. Hermit Island, towards the top of the mountains, J.D.H. Kerguelen's Land, covering the ground near the sea, Anderson, J.D.H.'. LECTOTYPUS (Moore 1968): *Hooker* 8, Tierra del Fuego, Isla Hermite, K (n.v.) SYNTYPI (?): Anon. ('Erebus' & 'Terror' Exped.), Cape Cumberland, Kerguelen Is., 1840 (HO 108900 p.p.). — Anon. ('Erebus' & 'Terror' Exped.), Christmas Harbour, Kerguelen Is., 1840 (HO 108899 p.p.).] Chastain, Fl. Veg. Iles Kerguelen (1958) 89–91; Moore, Vasc. Fl. Falkland Is. (1968) 94; Greene & Walton, Polar Record 17 (1975) 473–84; Moore, Fl. Tierra del Fuego (1983) 175–6.

ILLUSTRATIONS: J. Hooker, Fl. Antarct. (1845) Pl. 99; Chastain Fl. Veg. Iles Kerguelen (1958) Pl. 2,3,23; Moore, Vasc. Fl. Falkland Is. (1968) Fig. 14c.

Perennial herbs forming extensive tight mats and cushions; main branches \pm prostrate, woody, 2–3 mm in diameter; lateral shoots erect, herbaceous, freely branched, crowded, 3–15 cm tall, clothed in the remains of old leaves. *Leaves* alternate, closely imbricate and appressed to the stems, persistent; petioles white, 3.3–5.0(–10) mm long with 5 longitudinal veins, the outermost weak, with a membranous wing outside the veins, the wings fused in the lower $\frac{1}{4}$ – $\frac{1}{2}$ to form a sheath around the stem and produced above into free auricles at the base of the lamina; lamina \pm reniform, 2.1–4.2(–6.7) mm in radius, very thick, leathery, divided to about $\frac{1}{2}$ (or less) of its depth into (4–)5–6(–7) lobes; lobes blunt, tips rounded or with at most a tiny blunt apiculum (outermost lobes sometimes acute or long-apiculate), \pm flat on abaxial face, distinctly keeled on adaxial face, with thickened margins, glabrous or with a few coarse bristles 1.5–2.0(–3.0) mm long on adaxial surface, arising from the veins. *Flowers* terminal, in groups of 3, \pm enclosed by the upper leaves. *Involucral bracts* 2, lobed, leaflike, fused at the base to form a small cup. *Sepals* 5, deltoid, 0.4–0.6 mm long, 0.4 mm wide, spreading, weakly midribbed. *Petals* 5, 1.5–1.7 mm long, incurved, slightly hooded. *Stamens* 5, 2.0 mm long. *Styles* 2, 1.1–1.8 mm long, curved, with a swollen stylopodium at the base. *Ovary* ovoid, c. 2 mm long. *Fruit* olive-brown to yellow-brown, on a pedicel 2 mm long, at least $\frac{1}{2}$ -exserted from the upper leaves; body of fruit ovoid to obovoid, slightly flattened laterally, 1.7–2.0 mm long, 1.3–2.0 mm wide, 1.3 mm thick, weakly ribbed; styles and sepals persistent. (Fig. 2).

Extends from Tierra del Fuego to Falkland, Marion, Crozet, Kerguelen and Heard Islands. In Tierra del Fuego it is found in feldmark communities from 450–1100 m (Moore 1983). On Kerguelen Island the species grows in similar habitats, but at lower altitudes (Chastain 1958). On Heard Island it is the dominant species,

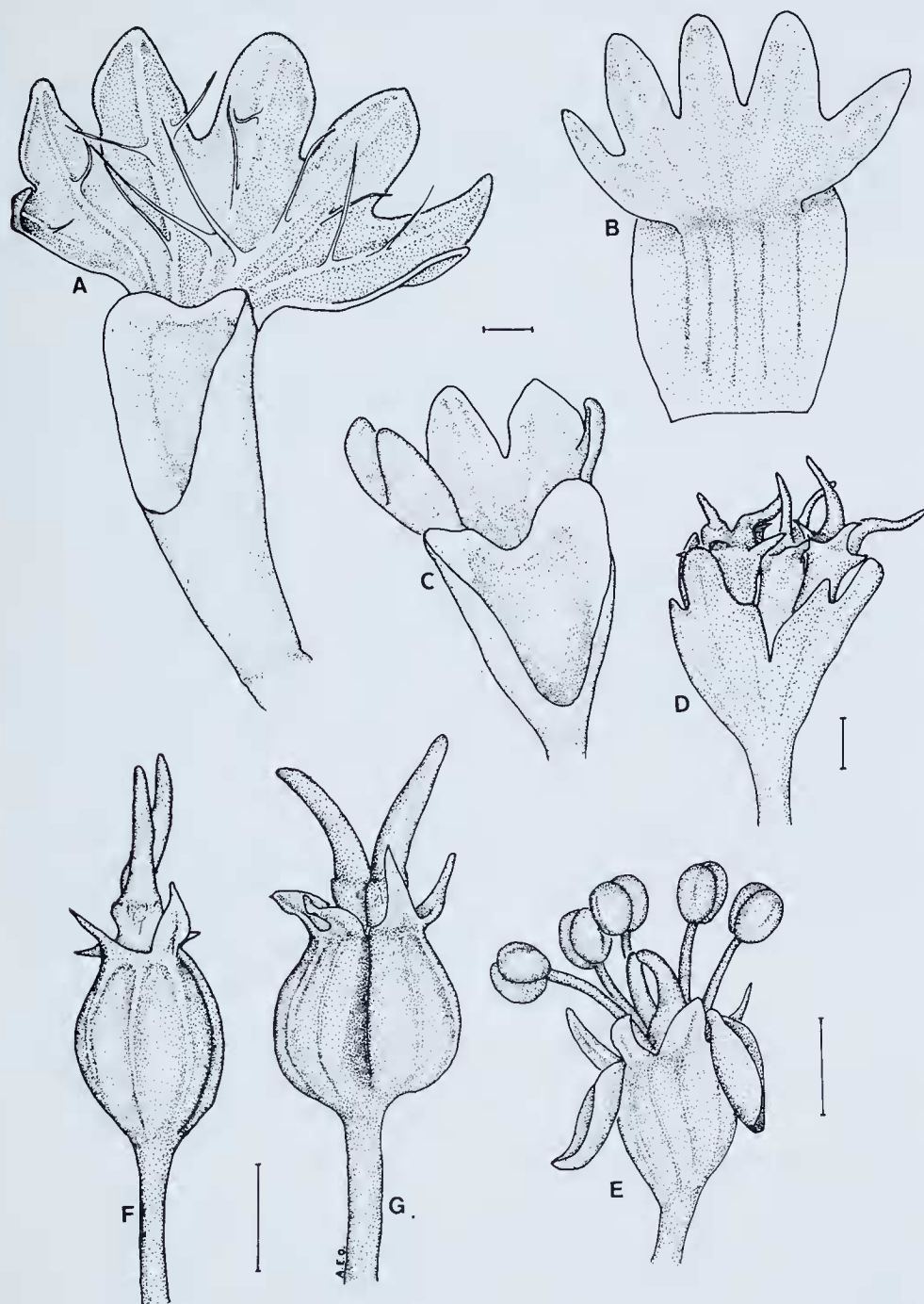


Fig. 2. *Azorella selago*. A — Leaf with bristles, adaxial view, stem removed to show sheath and 'ligule'. B — Leaf, glabrous form, abaxial view, sheath split and flattened. C — The same, adaxial view. D — Inflorescence showing group of 3 old flowers/young fruits in involucre cup. E — Flower. F — Fruit, dorsal view. G — The same, commissural view. (A, D, F, G from McGregor 12; B, C, E from Bratt P7; all bar scales represent 1 mm.)

abundant on all rocky sites between the limit of seaspray and c. 100 m (Smith 770).

SPECIMENS EXAMINED:

Kerguelen Island — Point Molloy, 16.ii.1971, *Bratt P6* (HO); foothills of Chateau Range, 17.ii.1971, *Bratt P7 & P8* (HO); Hill of the Drumlins, 15.iii.1971, *Bratt P21* (HO).

Heard Island — Old ANARE Station, Atlas Cove, 12.iii.1983, *Copson 103*; Atlas Cove, 8.ii.1963, *Filson 4596* (HO); Spit Bay, ii.1950, *Kenny s.n.* (MEL 1554181); Atlas Cove, 20.ii.1983, *McGregor 12* (HO); Skua Bay, 23.xii.1986, *Scott s.n.* (HO 104164); Fairchild Beach, 23.xii.1986, *Scott s.n.* (HO 104165); Atlas Cove, behind ANARE base, 20.i.1987, *Scott s.n.* (HO 104163); near former ANARE base camp, Atlas Cove, 8.ii.1983, *Smith 770* (HO).

ACKNOWLEDGEMENTS

I am grateful to Jenny Scott for the collection of *Azorella* and other genera on Heard Island during the 1986/87 expedition, and to Dr R. D. Seppelt for earlier collections of *Azorella* from Macquarie Island. The Australian Biological Resources Study supported the curation of the important Laird collection of Macquarie Island plants, and Dr J. H. Ross (MEL) kindly arranged the loan of the Taylor specimens.

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